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WANTS FOUR BATTLESHIPS.

President Roosevelt is not content with the naval bill which provides for the construction of only two battleships. He has sent a message to congress urging an appropriation for four battleships. He proposes it not as a measure of war but as a measure of peace. While wishing for it he feels that the time of military dismemberment is not at hand and that the United States, facing two oceans, should not be blind to existing conditions. He is not an advocate of peace at any price and is not content to rely for it upon the forbearance of other nations. His message is quite to the point. He says:

"To the senate and house of representatives. Let me again urge upon the congress the need of providing for four battleships of the best and most advanced type at this session. Prior to the recent Hague conference it had been my hope that an agreement could be reached between the different nations to limit the increase of naval armaments, and especially to limit the size of warships. Under these circumstances, I felt that the construction of one battleship a year would keep our navy up to its then positive and relative strength. But actual experience showed not merely that it was impossible to obtain such an agreement for the limitation of armaments among the various leading powers, but that there was no likelihood whatever of obtaining it in the future within any reasonable time. Coincidentally with this discovery occurred a radical change in the building of battleships among the great military nations—a change in accordance with which the most modern battleships have been or are being con-

structed of a size and armament which doubles, or more probably trebles, their effectiveness. Every other great naval nation has, or is building, a number of ships of this kind; we have provided for but two, and therefore the balance of power is now inclining against us.

"Under these conditions, to provide for but one or two battleships a year is to provide that this nation, instead of advancing, shall go backwards in naval rank and relative power among the great nations. Such a course would be unwise for us if we fronted merely on one ocean, and it is doubly unwise when we front on two oceans. As chief executive of the nation, and as commander-in-chief of the navy, there is imposed upon me the solemn responsibility of advising the congress of the measures vitally necessary to secure the peace and welfare of the republic in the event of international complications which are even remotely possible.

SUREST GUARANTY OF PEACE.

"Having in view this solemn responsibility, I earnestly advise that the congress now provide four battleships of the most advanced type. I cannot too emphatically say that this is a measure of peace and not of war. I can conceive of no circumstances under which this republic would enter into an aggressive war; most certainly, under no circumstances would it enter into an aggressive war to extend its territory or in any other manner seek material aggrandizement.

"I advocate that the United States build a navy commensurate with its powers and its needs, because I feel that such a navy will be the surest guaranty and safeguard of peace. We are not a military nation. Our army

is so small as to present an almost absurd contrast to our size. It is properly treated as little more than a nucleus for organization in case of serious war. Yet we are a rich nation, and undefended wealth invites aggression. The very liberty of individual speech and action, which we so prize and guard, renders it possible that at times unexpected causes of friction with foreign powers may suddenly develop. At this moment we are negotiating arbitration treaties with all the other great powers that are willing to enter into them. These arbitration treaties have a special usefulness because in the event of some sudden disagreement they render it morally incumbent upon both nations to seek first to reach an agreement through arbitration, and at least secure a breathing space during which the cool judgment of the two nations involved may get the upper hand over any momentary burst of anger. These arbitration treaties are entered into not only with the hope of preventing wrong-doing by others against us, but also as a proof that we have no intention of doing wrong ourselves.

"Yet it is idle to assume and, from the standpoint of national interest and honor, it is mischievous folly for any statesman to assume, that this world has yet reached the stage, or has come within measurable distance of the stage, when a proud nation, jealous of its honor and conscious of its great mission in the world, can be content to rely for peace upon the forbearance of other powers. It would be equally foolish to rely upon each of them possessing at all times and under all circumstances and provocation an altruistic regard for the rights of others. Those who hold this view

are blind indeed to all that has gone on before their eyes in the world at large.

CHINA'S WEAKNESS CITED.

"They are blind to what has happened in China, in Turkey, in the Spanish possessions, in Central and South Africa, during the last dozen years. For centuries China has cultivated the very spirit which our own peace-at-any-price men wish this country to adopt. For centuries China has refused to provide military forces, and has treated the career of the soldier as inferior in honor and regard to the career of the merchant or of the man of letters. There never has been so large an empire which for so long a time has so resolutely proceeded on the theory of doing away with what is called 'militarism.'

"Whether the result has been happy in internal affairs I need not discuss; all the advanced reformers and far-sighted patriots in the Chinese empire are at present seeking (I may add, with our hearty good will) for a radical and far-reaching reform in internal affairs. In external affairs the policy has resulted in various other nations now holding large portions of Chinese territory, while there is a very acute fear in China lest the empire, because of its defencelessness, be exposed to absolute dismemberment, and its well-wishers are able to help it only in a small measure, because no nation can help any other unless that other can help itself.

CALLS OF THE WEAK AND OPPRESSED.

"The state department is continually appealed to, to interfere on behalf of peoples and nationalities, who insist that they are suffering from oppression; now Jews, in one country, now Christians in another, now black men said to be oppressed by white men in Africa. Armenians, Koreans, Finns, Poles, representatives of all appeal at times to this government. All of this oppression is alleged to exist in time of profound peace, and frequently, although by no means always, it is alleged to occur at the hands of people who are not very formidable in a military sense.

"In some cases the accusations of oppression and wrong-doing are doubtless ill-founded. In others they are well founded, and in certain cases the most appalling loss of life is shown to have occurred, accompanied with frightful cruelty. It is not our province to decide which side has been right, and which has been wrong, in all or any of these controversies. I am merely referring to the loss of life. It is probably a conservative

statement to say that within the last 12 years, at periods of profound peace, and not as the result of war, massacres and butcheries have occurred in which more lives of men, women and children have been lost than in any single war since the close of the Napoleonic struggles. To any public man who knows of the complaints continually made to the state department there is an element of grim tragedy in the claim that the time has gone by when weak nations or people can be oppressed by those who are stronger without arousing effective protest from other strong interests. Events still fresh in the mind of every thinking man show that neither arbitration nor any other device can as yet be invoked to prevent the gravest and most terrible wrong-doing to peoples who are either few in numbers or who, if numerous, have lost the first and most important of national virtues—the capacity for self-defence.

VALUE OF FLEET TO NATION.

"When a nation is so happily situated as ours—that is, when it has no reason to fear or to be feared by its land neighbors—the fleet is all the more necessary for the preservation of peace. Great Britain has been saved by its fleet from the necessity of facing one of the two alternatives—of submission to conquest by a foreign power or of itself becoming a great military power. The United States can hope for a permanent career of peace on only one condition, and that is, on condition of building and maintaining a first-class navy; and the step to be taken toward this end at this time is to provide for the building of four additional battleships.

"I earnestly wish that the congress would pass the measures for which I have asked for strengthening and rendering more efficient the army as well as the navy; all of these measures, as affecting every branch and detail of both services, are surely needed, and it would be the part of far-sighted wisdom to enact them all into laws, but the most vital and immediate need is that of the four battleships.

CARRYING OUT WASHINGTON'S POLICY.

"To carry out this policy is but to act in the spirit of George Washington; is but to continue the policies which he outlined, when he said: 'Observe good faith and justice toward all nations. Cultivate peace and harmony with all. * * * Nothing is more essential than that permanent, inveterate antipathies against particular nations and passionate attachments for others should be excluded, and that in

place of them just and amicable feelings toward all should be cultivated. * * * I cannot recommend to your notice measures for the fulfilment of our duties to the rest of the world without again pressing upon you the necessity of placing ourselves in a condition of complete defense, and of exacting from them the fulfilment of their duties toward us. The United States ought not to indulge a persuasion that, contrary to the order of human events, they will forever keep at a distance those painful appeals to arms with which the history of every other nation abounds. There is a rank due to the United States among nations which will be withheld, if not absolutely lost, by the reputation of weakness. If we desire to avoid insult, we must be able to repel it; if we desire to secure peace, one of the most powerful instruments of our rising prosperity, it must be known that we are at all times ready for war.'

"THEODORE ROOSEVELT,

"The White House, April 14, 1908."

CHART OF STRAITS OF MACKINAC.

The United States lake survey office of Detroit has issued a new edition of the chart of the Straits of Mackinac on a scale of a little better than half an inch to the mile.

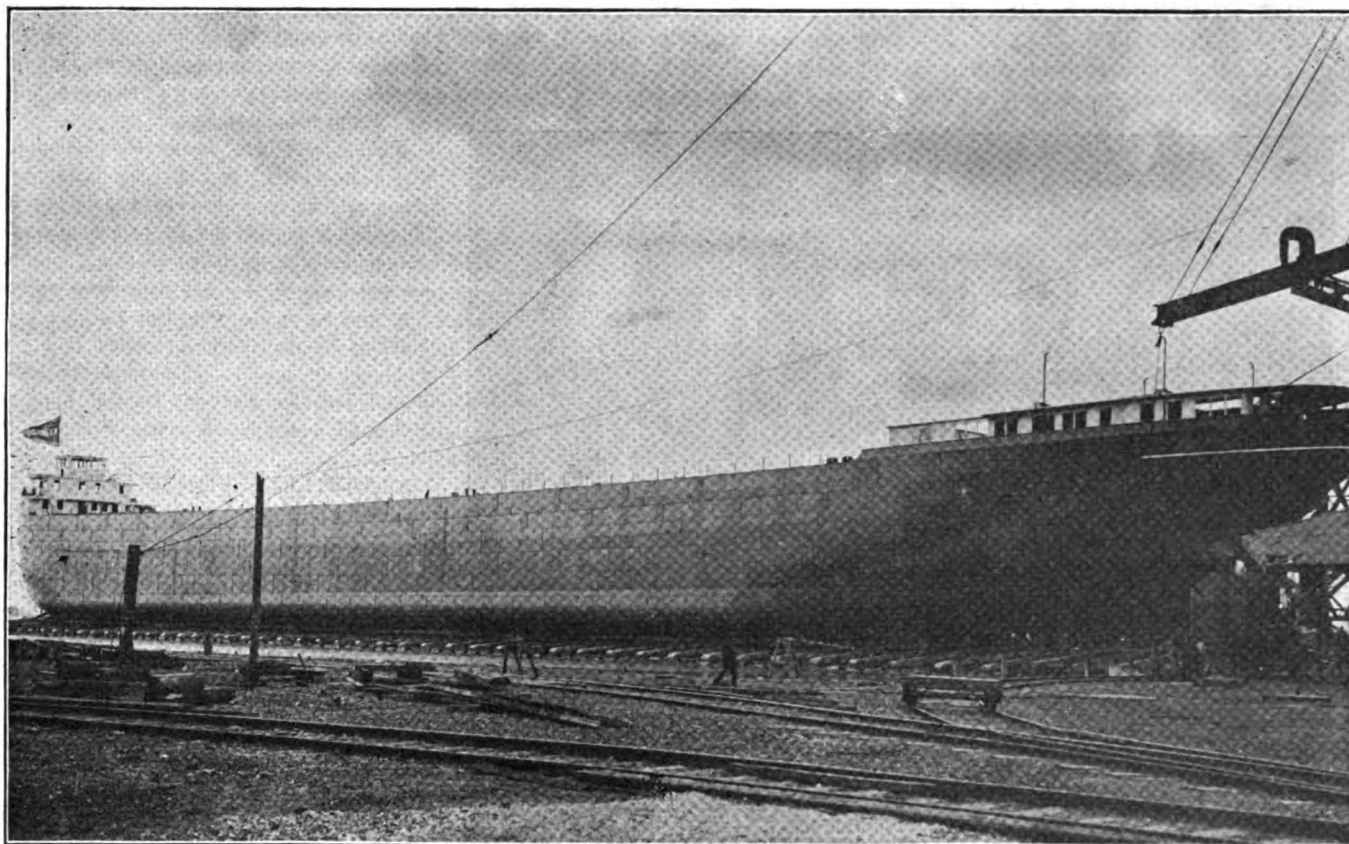
The original surveys in this important vessel roadway were made more than 50 years ago. The recent work of the lake survey steamer Search showed up a number of dangerous obstructions, and these are shown in this new edition.

The attention of mariners is called to the lone rock southeast of Manitou Paymen shoal, and to the shoal water off the mouth of the Brevoort river and off Point Aux Chenes.

The new shoals in the vicinity of Cheboygan and off Cordwood point are important. On account of the discovery of these last shoals, the sailing course through the straits has been moved to the northward, and this has changed the Lake Huron and Lake Michigan courses converging here.

Many names along the north shore have been brought up-to-date and many added. The chart shows more compass roses than the last edition. The marginal latitude and longitude scales are divided into minutes. A table of magnetic variation has been added.

Mr. James C. Thompson, who has been for the past 27 years the agent of the Anchor line at Houghton, Mich., has been transferred to Milwaukee.



PHOTOGRAPH OF THE BULK FREIGHTER A. E. NETTLETON JUST PRIOR TO HER LAUNCHING AT THE WYANDOTTE YARD OF THE AMERICAN SHIP BUILDING CO. THIS PICTURE IS A STRIKING ONE, AS IT SHOWS GRAPHICALLY INTO WHAT A SMALL BODY OF WATER IT IS POSSIBLE TO LAUNCH A GREAT SHIP BY THE SIDE LAUNCH METHOD. NOTE THE SIZE OF THE SLIP.

POMONA'S CAPTAIN SUSPENDED.

Capt. C. Swansen has been suspended for six months by the Steamboat Inspection Service of San Francisco for running the steamer Pomona on the rocks. Capt. Swansen admitted that he alone was at fault, but pleaded in extenuation that it must have been a pinnacle rock that he hit, as he declared that in heavy weather he had frequently gone further inshore. The findings of the inspectors were as follows:

From testimony taken at the trial after the investigation in the above matter, we find that the steamship Pomona, C. Swansen, master, was on her voyage from San Francisco to Eureka, Cal. The steamer left San Francisco at 11 a. m., March 17. After passing Point Reyes at 2:40 p. m. the wind blew half a gale from north-northwest, with a heavy sea running; ship making slow headway on account of wind and sea. Captain Swansen thereupon decided to go up along shore, and shaped his course for Russian river, north 25 degrees west by standard compass. At 6 p. m. passed Russian river $1\frac{1}{2}$ miles off; course changed to north 60 degrees west at 6:32 p. m. The vessel struck a submarine rock on the starboard

side abreast of the foremast. Capt. Swansen immediately ordered the first mate to sound the bilges and hauled the steamer out to north 80 degrees west.

When the steamer struck the engines were stopped, and afterward started ahead slow. The chief mate reported 2 ft. of water in the fore hold and then went below to see if he could do anything to stop the inflow of water. He returned and reported four feet of water in the fore hold. The sluice gate was opened and all pumps started, but the water gained rapidly, and the vessel was going down by the head. Captain Swansen put the ship ahead full speed and ordered the boats swung out and lowered to deck rail, ready to receive passengers, at the same time heading the steamer for Fort Ross cove, a small landing near by, with the intention of beaching the vessel. While heading toward a sandy place, which Captain Swansen considered a good place to beach the ship, he saw a buoy to the northwest, which he thought was an aid to make the landing at this place. As she was heading toward this buoy the vessel ran on top of a reef, where she now is lying.

All the passengers and crew were landed safely, women and children being con-

veyed in the first boats to shore, the men following. Bedding and provisions were also taken ashore and the passengers given shelter at a farm house. Some of the passengers made the return trip to San Francisco overland, by wagon and railroad, and the balance were taken on board the steamship City of Topeka, which vessel was dispatched to the scene of the wreck for that purpose.

We find that the Pomona was well found and in good seaworthy condition.

After a careful review of the evidence and mature deliberation, we are satisfied that Captain Swansen, master of the steamship Pomona was unskillful in navigating his vessel on March 17, 1908, in deviating from the usual course and running so near the coast, where, although the chart does not show any submerged rocks outside of the 25-fathom curve, there may be pinnacle rocks that do not show on the surface and have not, as yet, been located by the United States geodetic and coast survey. For such unskillfulness we, the local inspectors for the port of San Francisco, by authority given us in section 4450, United States revised statutes, suspend his license as master and pilot for a period of six months from this date.

THE HONORABLE PETER WHITE.

Considerable interest was displayed in an exhibition of the second edition

types of ore carriers, notably the schooners that were towed through the rivers in the 70's. It was common practice to tow six or seven schooners

ped, however, and there are few of them now on the lakes. The public displayed considerable interest in the modern ore carrier with its open hold and numerous hatches.

Two views are herewith published, one showing the display and one showing a typical crowd about it. This book endeavors to relate in readable form the history of the development of the Lake Superior iron country, and as a contribution to the iron history of the United States it is, in a class by itself. The book is published by the Penton Publishing Co. Price \$2, postage 18 cents extra.

LIABILITY FOR SUCTION.

The liability of a steamship for damage caused by suction is upheld by the United States district court of Alabama in the following decision:

"The swell or suction created by a steamboat attempting at full speed to go ahead over an obstruction near the bank where a raft was moored so broke it up as to wash out into the stream 30 logs, which were carried off by the current or tide, and lost. In directing a decree to be entered for the owner of the raft for \$90 damages, the United States district court, in Alabama, says (The Rotherfield, June 10, 1903, 123 Federal Reporter, 460) that the



THE FULL WINDOW DISPLAY OF THE BOOK "THE HONORABLE PETER WHITE" IN BURROWS BROS. WINDOW IN CLEVELAND.

of the book entitled "The Honorable Peter White" in the window of Burrows Bros. Co., on Euclid avenue, Cleveland, recently. The east window was entirely devoted to the display and usually held a crowd about it at all hours during the week. Particular interest was manifested in the various photographs showing the evolution of the unloading machinery. This feature of the display was extremely graphic and it carried pictorially the process of unloading from the wheelbarrow stage to the present automatic bucket, capable of grabbing 12 tons at a time and making a trip every minute. This evolution of the unloading machine is the gradual development of 30 years, though progress has been rapid during the past 10 years. While the problem of hoisting and conveying had been solved in the 80's, it was not until the latter end of the 90's that a bucket was devised that would automatically fill itself. Buckets were still being filled by hand, though by nesting or grouping them fair dispatch was obtained by hand shoveling.

Among the photographs exhibited was that of the brig Columbia, the first to carry ore through the canal at Sault Ste. Marie. Various pictures were also shown of the successive



A TYPICAL SCENE ABOUT BURROWS BROS. WINDOW DURING THE WEEK THAT THE BOOK "THE HONORABLE PETER WHITE" WAS EXHIBITED.

through the rivers at one time, but gradually the steamer with one consort supplanted this mode of carriage. Consorts are fast being drop-

ped, however, and there are few of them now on the lakes. The public displayed considerable interest in the modern ore carrier with its open hold and numerous hatches.

Adlai E. Stevenson, former vice pres-

The Boston bark Harrison G. Johnson, which was recently sold by N. W. Rice & Co., of this city, has gone ashore on Cumberland Island.

Wm. C. Sauer died at his home near Detroit recently at the age of 66 years.

	No.	Gross tons
Nine months ended March 31, 1908.....	246	65,511
" " " " 1907.....	258	64,217

ident of the United States, presided at a meeting held in the interest of the deep waterway from the lakes to gulf at Bloomington, Ill., last week. Judge C. J. Lindley and Congressman Wm. Lorimer were the speakers.

The armored cruiser Montana underwent her trial last week, reaching a maximum speed of 22.86 knots and an average speed of 22.035 knots.

The steamship Isthmian, of the American-Hawaiian Steamship Co.'s fleet, built by the Union Iron Works, underwent her steam trials last week successfully, averaging 13 knots an hour. The Isthmian is 380 ft. long, 50 ft. beam, 28 ft. 6 in. deep, and is schooner-rigged with two masts.

The steamer Pomona, which went on Monterey reef near Fort Ross on the evening of March 17, has been stripped of her machinery and fittings above deck. The hull settled into an immovable position and is a total loss.

The bureau of navigation reports 80 vessels of 59,316 gross tons built and officially numbered in the United States during March. Of this proportion 10 of 50,407 gross tons were built on the lakes, namely, the John Dunn Jr., Fred G. Hartwell, B. F. Berry, J. J. H. Brown, M. A. Bradley, Normania, Wainwright, John A. McGean and J. E. Upson. These figures, while emphasizing the preponderance of ship building on the lakes in comparison with the coast, are nevertheless misleading. They represent the launchings of three months rather than of one.

An order of recent date from the navy department to the Mare Island navy yard gives directions for the armored cruisers Colorado and Pennsylvania, of the Pacific fleet, to proceed immediately to the Bremerton navy yard for docking and extensive repairs, remaining there until May 1, when the first division of the fleet, including the Maryland and West Virginia, will reassemble in northern waters. New 8-inch guns will be placed aboard the Colorado at Bremerton. The Maryland and the West Virginia will go north upon the completion of repairs at the Mare Island navy yard and will dock before the reassembling of the fleet; the Washington and the Tennessee will also proceed northward early in April for docking and minor repairs, remaining at the yard but a short time.

E. B. Hill has been appointed as assistant to the manager of the Fore River Ship Building Co., to take the place of John R. Purdon, resigned. Mr. Hill has been with the company ever since it first started in Quincy, Mass., and during the time which has followed he has been in general

charge of the construction of the following named vessels: Battleship Rhode Island; car floats Nos. 111 and 112, for the New York, New Haven & Hartford Railroad Co.; steamers Satilla, Ocmulgee, Ossabaw, Ogeechee and Altamaha, for the Brunswick Steamship Co.; steamships Everett, Malden and Melrose, for the Massachusetts Steamship Co.; steam lighter New England and transfer tug No. 21, for the New England Navigation Co.; and lightships No. 90, 91, 92 and 93, for the department of commerce and labor, United States government. Previous to this Mr. Hill assisted in charge of the construction of the United States cruiser Des Moines, schooner Thomas W. Lawson, and schooner William L. Douglas.

The Cleveland & Buffalo Transit Co., of Cleveland, has announced the personnel of the fleet for the season of 1908 to be as follows: For the City of Erie—Captain, H. McAlpine; chief engineer, George Turnbull; steward, A. J. Herbert; purser, Alex. McCallum. For the City of Buffalo—Captain, W. H. Smith; chief engineer, Charles Lorimer; steward, A. C. Janke; purser, J. H. McCallum.

During a gale, the Northern Naviga-

tion Co.'s steel freighter Doric broke from her moorings at Owen Sound and smashed into the new C. P. R. liner Assiniboia, striking her opposite the after gangway. The damage was slight.

The steamer Tecumseh, which was purchased by Tretheway & Sons, Goderich, Ont., from McArthur Bros., of Toronto, is now at Windsor, undergoing extensive repairs prior to entering upon the Georgian Bay coal and lumber trade.

The steamer Samoa was sold at United States marshal's sale at Detroit this week, bringing \$3,675. She was bid in by F. C. Harvey, an attorney of Detroit, who is believed to be acting for Henry Weiman Jr.

The steamer Coppename, of the Royal Dutch West India Mail Steamship Co., arrived on Monday at New York, bringing the first cargo of Surinam bananas to that city. This company has constructed four new steamers, each of about 3,500 tons and an average speed of 13½ knots, and the Coppename inaugurates the weekly service to Trinidad and Barbados, with occasional stops at Demerara. There will be accommodation on the vessels for 62 passengers, with every modern convenience.

SUMMARY OF NAVAL CONSTRUCTION.

Following is the rate of progress on naval vessels under construction as noted by the bureau of construction and repair:

Name of Vessel.	Building at—	—1908—	
		Per cent of completion. Feb. 1.	March 1.
BATTLESHIPS.			
Idaho	Wm. Cramp & Sons.....	95.9	97.25
New Hampshire	New York S. B. Co.....	97.8	99.30
South Carolina	Wm. Cramp & Sons.....	36.4	39.05
Michigan	New York S. B. Co.....	41.6	45.09
Delaware	Newport News S. B. Co.....	9.2	12.77
North Dakota	Fore River S. B. Co.....	17.5	21.40
ARMORED CRUISERS.			
North Carolina	Newport News S. B. Co.....	97.0	98.00
Montana	Newport News S. B. Co.....	93.4	94.96
SCOUT CRUISERS.			
Chester	Bath Iron Works.....	96.2	98.38
Birmingham	Fore River S. B. Co.....	96.2	96.69
Salem	Fore River S. B. Co.....	93.9	94.31
TORPEDO BOAT DESTROYERS.			
T. B. Destroyer No. 17.....	Wm. Cramp & Sons.....	4.5	6.88
T. B. Destroyer No. 18.....	Wm. Cramp & Sons.....	3.8	6.80
T. B. Destroyer No. 19.....	New York S. B. Co.....	5.1	8.40
T. B. Destroyer No. 20.....	Bath Iron Works.....	2.5	5.38
T. B. Destroyer No. 21.....	Bath Iron Works.....	2.5	4.91
SUBMARINE TORPEDO BOATS.			
Submarine T. B. No. 9.....	Fore River S. B. Co.....	99.0	99.00
Submarine T. B. No. 13.....	Fore River S. B. Co.....		23.00
Submarine T. B. No. 14.....	Fore River S. B. Co.....		23.00
Submarine T. B. No. 15.....	Fore River S. B. Co.....		23.00
Submarine T. B. No. 16.....	Fore River S. B. Co.....		16.30
Submarine T. B. No. 17.....	Fore River S. B. Co.....		7.50
Submarine T. B. No. 18.....	Fore River S. B. Co.....		7.50
Submarine T. B. No. 19.....	Fore River S. B. Co.....		7.50
COLLIERS.			
Vestal	Navy Yard, New York.....	64.4	69.40
Prometheus	Navy Yard, Mare Island.....	27.3	38.40
TUG BOATS.			
Patapsco	Navy Yard, Portsmouth.....	38.0	45.00
Patuxent	Navy Yard, Norfolk.....	38.0	45.50

ORE DOCK CAPACITIES.

W. A. Clark, chief engineer of the Duluth & Iron Range railroad, has just compiled his annual chart on the ore docks of the great lakes. It will be noted that No. 1 dock of the Duluth, South Shore & Atlantic railway is omitted from the chart this year, but nevertheless the total storage capacity of the docks as of May 1, 1908, shows an increase of 63,380 tons over that of May 1, 1907. The docks number 25 with a storage capacity of 1,289,723 tons, against 26 of 1,226,343 tons last year. No additions were made during 1907.

Lloyds Register with a view to classification by this society. In addition, 59 vessels of 184,137 tons are building abroad with a view to classification. The total building at the present time under the supervision of Lloyds Register is, thus, 358 vessels of 754,837 tons.

A diagram, published by the registry, indicating the gross tonnage of vessels under construction in the United Kingdom since 1883, shows that the work now in hand is lower than at any period since the second quarter of 1897.

A table showing the work in hand in the principal districts (warships included) shows that Newcastle, the center of

190 tons (against eight steamers of 3,950 tons).

The warships under construction were as follows: Seven first class battleships, two each of 37,850 tons displacement at Devonport and Portsmouth, and one each at Barrow (19,250 tons), Elswick (18,600 tons), and Jarrow (16,500 tons); five first class armored cruisers, one each of 14,600 tons displacement at Chatham and Pembroke, and one each of 17,250 tons at Clydebank, Elswick, and Govan; one third class cruiser of 3,300 tons at Pembroke; seven torpedo boat destroyers at Birkenhead (1), Elswick (1), Cowes (2), and Woolston (3); 21 first class torpedo boats,

RECORD OF ORE DOCKS ON THE GREAT LAKES.

Railway	Location	Dock No.	Number of Pockets	Storage Capacity Tons	Height Water to Center Hinge Hole	Height Water to Deck of Dock	Width of Dock Outside of Part'n Posts	Length of Spouts	Length of Dock	Angle of Pockets
Chicago & North Western Ry.	Escanaba, Mich.	1	184	21143	28 10	48 6	37 0	21 0	1104	39-30
"	"	3	226	28792	31 2	52 8	37 0	27 0	1356	45-0
"	"	4	250	34925	36 6	59 2	37 0	30 0	1560	45-0
"	"	5	252	33663	28 6	53 4	37 0	21 8	1392	40-0
"	"	6	320	69760	40 0	70 0	50 2	30 0	1920	45-0
"	Ashland, Wis.	1	234	42120	40 0	70 0	50 2	30-0	1404	45-0
"	"	2	234	42120	40-0	70 0	50 2	30-0	1404	45-0
"	"	Total	1680	27 523						
*Duluth & Iron Range Rail Road.	Two Harbors, Minn.	1	202	40400	35 5	59 6	49-0	27-0	1388	38-42
"	"	2	208	41600	33 5	57 6	49 0	27-0	1280	38-42
"	"	3	170	34000	40-0	66-0	49-0	27-0	1054	43-32
"	"	4	168	36960	37 0	62 0	49-0	29 0	1042	38-42
"	"	5	168	35450	39 0	66-9	49-0	30 0	1050	43-32
"	"	Total	916	188410						
Duluth, Missabe & Northern Ry.	Duluth, Minn.	2	384	69120	32 0	57 6	49 0	27-9	2346	45-0
"	"	3	384	80640	40 7	67 ½	49-0	27-9	2304	45-0
"	"	4	384	119274	41 9½	72-6	57-0	30-1½	2304	45-0
"	"	Total	1152	269034						
Great Northern Ry.	Superior, Wis.	1	374	100980	40 0	73-0	62 8	32-4	2240	45-0
"	"	2	350	94500	40-0	73 0	62 8	32-4	2100	45-0
"	"	3	326	88020	40 0	73-0	62 8	32-4	1956	45-0
"	"	Total	1050	283500						
Duluth, South Shore & Atlantic Ry.	Marquette, Mich.	4	200	28000	27 9	47-3	36 8	21 1	1200	39-45
"	"	5	200	50000	40 0	76-10	51-0	32-4	1236	45-0
"	"	Total	400	78000						
Lake Superior & Ishpeming Ry.	Marquette, Mich.	1	200	30000	30 9	54-0	50 0	24-7	1232	38-40
Wisconsin Central Ry.	Ashland, Wis.	1	314	48356	40 0	66-2	36-0	27-0	1903	50-45
Chicago, Milwaukee & St. Paul Ry.	Escanaba, Mich.	1	240	50400	40-2½	66-6	52-0	120 27-0	1500	45-0
"	"	2	240	63500	40 11½	69 2	54-0	120 29-4	1500	45 0
"	"	Total	480	113900				30 4½		
Algoma Central & Hudson Bay Ry.	Michipicoten, Ont.	1	12		34 0	43 4	25 0	22-6	811-9	44-0

*312 Single Pockets. 1076 Double Pockets.

A QUARTER'S SHIP BUILDING RETURNS.

From the returns compiled by Lloyds Register of Shipping, it appears that, excluding warships, there were 415 vessels of 847,501 tons, gross, under construction in the United Kingdom at the close of the quarter ended March 31, 1908. The tonnage now under construction is 101,000 tons less than that which was in hand at the end of last quarter, and 459,000 tons less than that building 12 months ago. No such decrease in the ship building industry during a period of 12 months has occurred since September, 1884, when the reduction in tonnage, as compared with September, 1883, amounted to over 469,000 tons. Of the vessels under construction in the United Kingdom at the end of March, 299 of 570,700 tons are under the supervision of the surveyors of

the disaffected ship building industry, heads the list with 64 steamers of 174,037 tons, compared with 81 steamers and one sailer of 242,170 tons. The other districts have work in hand as under: Belfast, 23 steamers of 172,530 (against 21 steamers and 10 sailers of 220,135 tons); Glasgow, 81 steamers of 164,575 tons (against 109 of 272,398 tons), and 31 sailers of 5,968 (compared with 19 of 2,690 tons); Greenock, 36 vessels of 125,284 tons (against 58 vessels of 180,190 tons); Sunderland, 23 steamers of 61,903 tons (compared with 56 steamers of 193,158 tons); Middlesbrough and Stockton, 17 vessels of 43,165 tons (against 29 of 80,375 tons); Hartlepool and Whitby, 13 steamers of 36,350 tons (compared with 17 of 57,220 tons); and Barrow, Maryport, and Workington, 11 vessels of 10,-

at Jarrow (2), Woolston (4), Hebburn (4), Dumbarton (3), and Cowes (8); 14 submarine boats, 2 at Chatham and 12 at Barrow. All these are for the British government. There are also building, two battleships, one each (of 19,000 tons displacement) at Barrow and Elswick; two scouts at Elswick, two gunboats at Elswick, eight torpedo destroyers, at Jarrow (2), Poplar (2), and Scotstoun (4), and two submarines at Barrow.

The latest returns at Lloyds Register of foreign ship building show that Germany is constructing 53 vessels, United States 49, Norway 37, Holland 36, France 24, and Austria-Hungary 14.

The Bird-Archer Co. has established offices in Cleveland at No. 403 Arcade. The Erie Machinery Co. are the Cleveland agents of the Bird-Archer Co.



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OCEAN MAIL ACT.

The Ocean Mail Act was defeated in the house by the failure of the post-office committee to report it favorably, the vote standing 8 to 7 against it. This is a very great pity, as there is no sound reason why the bill should not be favorably reported and passed. It merely endeavors to extend the provisions of the Ocean Mail Act of 1891 to vessels of lesser speed operating to sections not now reached by American mail steamers, as for instance South America and Australasia. Even the financial objection could not be consistently brought against this measure. It did not contemplate the expenditure of a single cent out of the treasury, but merely sought to invest the present profits on ocean mail postage in the projection of new lines. Undoubtedly in the course of time these new lines would be as profitable as the old ones are now, which earn

annually \$3,000,000 for the government.

There is some hope that the measure may yet pass in another form. Senator Gallinger, the author of the bill as it passed the senate, has announced his willingness to incorporate its features in the general postoffice appropriation bill, and this would then go to the conference committee for joint agreement. This appears to be a perfectly feasible plan and the outcome of it will be watched with some interest. It does not matter in what form it gets upon the statutes. The thing is to get the ships built and running. No other country on earth would dawdle the way the United States government has in a matter of such importance.

LAKE SITUATION.

The feature of the week in lake trade has been the signing of individual contracts between the engineers and vessel owners. It is now understood that over 400 chief engineers have signed with their owners. No trouble whatever is anticipated with labor when the season opens. Should conditions warrant, a general start may be authorized on May 12. On this date a general meeting of vessel owners will be held in Cleveland. It must be admitted, however, that unless conditions visibly improve in the meantime, the start will be delayed beyond that date. There is nothing encouraging in the situation as it presents itself now. Little ore is going forward from dock to furnace and when the census is taken on May 1, it will find that stocks on dock have not been sensibly diminished since last December.

A canvass among the leading lines shows that practically all of them have reached an understanding with their engineers. The Pittsburgh Steamship Co. was the first to sign with all of its engineers and has already put the engineers of the "Big Twelve" at work. They left for their boats on Sunday last and are now fitting out. Other companies, where they have not actually signed, have reached an understanding with their men. It appeared last week as though the line managers

might be unable to induce their engineers to sign individual contracts, but this has now been obviated, and all of them will be ready to sail when a general start is made, probably during the latter part of next week.

The various lodges of the Marine Engineers' Beneficial Association have held meetings during the past week and have endorsed the attitude of the executive committee of the association, declaring against the open shop; but nevertheless as individuals they recognize the practical condition confronting them and are accepting their old positions. E. I. Jenkins, second national vice president of the Marine Engineers' Beneficial Association, has resigned his office in order to take out one of the Tomlinson steamers.

The dock managers operating the Lake Erie docks, who two years ago made a biennial contract with the International Longshoremen's Union, have now followed the action of the Lake Carriers' Association and have declared for the open shop. All the coal and ore docks from Toledo to Buffalo will be operated on that principle hereafter, and no conferences will be held with the Longshoremen's Union. No change will be made in wages or hours of work, which will be continued upon the basis of the past two years, meaning a 10-hour day and 14 cents a ton for the shovelers. The dock managers and superintendents held a meeting in the Rockefeller building, Cleveland, this week, and it was the unanimous opinion that the only satisfactory method of operating the docks was to operate them upon the open shop principle. The following resolutions were accordingly adopted:

"The experience of the dock managers and dock superintendents for the past few years has demonstrated the necessity of working the docks on the open shop principle in order to give them the proper control of their docks, which is required for the equal good of the owners, their employees, the vessel interests and all concerned; therefore, be it

"Resolved, First, that the dock managers of Lake Erie do now declare

that the open shop principle be adopted, and adhered to on our docks.

"Second, that the dock managers stand for the open shop principle.

"Third, that it is the intent of the dock managers to pay a fair and just rate of wages, to insist on such rules and regulations as shall conduce to the well being of their employes and shall enforce a system of discipline requiring faithful and diligent performance of duty.

"Fourth, and at this meeting, representing all the docks on Lake Erie, it is voted to adhere to and observe this action."

LAKE LAUNCHINGS.

The steamer Wm. H. Wolff, building for Capt. D. Sullivan, of Chicago, was launched from the Lorain yard of the American Ship Building Co. on Saturday last and was christened by Wm. H. Wolff Jr., eight-year-old grandson of the late Wm. H. Wolff. This vessel has the distinction of being the first to be christened by a boy and the first to hail from the new port of Gary. The Gartland Steamship Co. of Chicago has been organized to operate her.

The Wolff is 524 ft. over all, 504 ft. keel, 54 ft. beam and 31 ft. deep. She has 30 hatches spaced 12 ft. centers. Her engines are triple-expansion with cylinders 22½, 36 and 60-in. diameters by 42-in. stroke, supplied with steam from Scotch boilers, 13 ft. 9 in. by 11 ft. 6 in., equipped with Ellis & Eaves draught and allowed 180 lbs. pressure. She will carry 9,000 gross tons of ore.

In the launching party were: Mr. and Mrs. A. M. Beecher, Mrs. Charles Dyer, Frank Pingree, W. H. Wolff Jr., T. M. Sheriffs, Capt. J. H. Wanwig, of Milwaukee; Capt. and Mrs. D. Sullivan, Mr. and Mrs. Scott J. Dow, Capt. and Mrs. W. Anderson, James Mowatt, of Chicago; Mr. and Mrs. Frank Sullivan, Robert Logan, Miss Stone, W. B. Davock, Miss Clara Davock, Mr. and Mrs. Roy Williams, Mr. and Mrs. Thomas Dumpner, Capt. Wm. Hill, Capt. Tom Johnson, of Cleveland; Capt. J. J. H. Brown, of Buffalo; Capt. Edward Fitch, Capt. Tom Beggs, Mr. and Mrs. F. E. Townsend, of Cleveland.

The launching of the steamer Wm. Livingstone from the Ecorse yard of the Great Lakes Engineering Works on Saturday next will be an event of unusual importance. The vessel will be christened by Mrs. Livingstone. The guests will include vessel owners, bankers and men distinguished in public life with whom Mr. Livingstone

has been in contact for many years. The Great Lakes Engineering Works has chartered the steamer Pleasure to convey the guests to the ship yard and in the evening will tender them a dinner at the Hotel Pontchartrain.

The bulk freighter Howard M. Hanna Jr., building for Capt. W. C. Richardson, of Cleveland, will be launched at the Cleveland yard of the American Ship Building Co. at noon on Tuesday next.

The bulk freighter John A. Donaldson, which is building for W. H. Becker, of Cleveland, at the Lorain yard of the American Ship Building Co., is scheduled to be launched on Saturday, May 2.

The bulk freighter Rufus P. Ranney, building at the West Superior yard of the American Ship Building Co. for the Triton Steamship Co. of Cleveland, of which J. R. Davock is manager, will be launched on Saturday next.

The new steamer building for W. A. & A. H. Hawgood will be named for W. R. Woodford, vice president of the Pittsburg Coal Co. The boat is scheduled to be launched from the Bay City yard of the American Ship Building Co. on May 16.

LITIGATION AT THE SAULT.

Justice Holmes of the supreme court of the United States has handed down a decision in the case of the United States versus the Chandler-Dunbar Water Power Co., affirming the ruling of the United States circuit court for the sixth circuit, whose opinion was favorable to the company. The case involved a number of interesting questions, including the treaty rights of Great Britain in St. Marys river, Mich., and also the rights of riparian owners to the bed of that stream. The company claimed through a grant made by the government in 1883 to one Chandler, a tract of land lying along the St. Mary and opposite islands, known as Nos. 1 and 2, in that stream. The islands themselves are insignificant, being nothing but barren rocks of small surface, but there is a rapid fall of the stream at this point and a sharp rivalry between two power companies for their possession has developed.

The Michigan-Lake Superior Co. originally began the proceeding in an effort to control the stream, and the government was drawn into the case through that company's allegations that the Chandler company was not in legal possession of the stream. The suit was brought by the government to "quit its title."

It was contended on behalf of the

government that the ownership of the main land did not carry with it title to the bed of the stream and the islands lying between, but it was alleged that the assertion of private ownership would not only interfere with commerce, but might affect Great Britain's rights, because this is a boundary stream between the United States and Canada. The government sought to obtain a ruling against Chandler's rights on the islands. The court of appeals, however, held against the government on all the contentions, and the supreme court has now accepted this view of the case.

Justice Holmes did not discuss the question as to whether the rights of Great Britain were involved, but held that the Michigan law granting the beds of streams with contiguous lands should control in the case. The water rights involved are very valuable and important legislation by congress has been waiting for some time on the decision of this case.

The decision of the supreme court was rather unexpected, though every effort has been made to secure a decision before adjournment of congress, as the whole Sault tangle is in the hands of the rivers and harbors committee. The case was heard three weeks ago. If the government now should conclude that the needs of navigation require an unrestricted waterway in the St. Mary's river, it can start condemnation proceedings and acquire the holdings of the Chandler-Dunbar Co.

AROUND THE GREAT LAKES.

The passenger steamer Missouri was the first boat to pass into the Straits of Mackinaw this season, reaching Cheboygan on Sunday last.

Capt. George Kuma, of Detroit, has sold the schooner Herschel to the Peninsula Tug & Towing Co., of Warton, Ont.

The Great Lakes Towing Co. has chartered the tug James Byers to Butler Bros. & Huff Co. contractors, who are building the Detroit river tunnel.

The Northern Navigation Co. has engaged Frank E. Kirby as consulting engineer on the big passenger steamer which the Collingwood Ship Building Co. will build for them this year. Louis Keil, of Detroit, will have charge of the interior decorations.

The Detroit & Cleveland Navigation Co. has issued a post card announcing the opening of navigation of the Mackinaw division. Sailings occur regularly from Toledo on Mondays and Thursdays and from Detroit on Mondays and Fridays.

PRIZE WINNING ESSAYS

The Fourth Prize Essay in the Competitive Contest Originated by the Merchant Marine League of the United States.

In the competitive contest for the best essay upon the subject "How to Upbuild the American Merchant Marine in the Foreign Trade" projected by the Merchant Marine League of the United States, the fourth prize was awarded to L. M. Erskine, of Bowdoin college. Concerning this essay the judges wrote:

"He discusses five plans. The economic plan he dismisses because it disregards the immediate need of auxiliary naval power. The free ship plan he dismisses because it would be the means of sending a large amount of money to foreign lands, would close our ship yards and would not assist in the operation of the vessel after it was built. The free trade plan he condemns because it does not follow that an increase in foreign trade means an increase in shipping. He dismisses the discriminating plan and pleads for a direct subsidy.

"Our reason for recommending this paper lies in the ingenious suggestion which he makes for the administration of this subsidy. He would have a permanent commission appointed composed of the secretary of the navy, secretary of commerce and labor, and postmaster general, with four other members appointed by the president to settle all questions of shipping. This commission would have power to establish new lines and determine the amount of subsidy necessary, increasing or diminishing it as business conditions required. There certainly would be much merit in having our shipping under the jurisdiction of a competent board of experts much after the fashion of the British board of trade. He argues that there is nothing in his plan to which other nations could take exception."

L. M. Erskine was born at Jefferson, Me., April 1, 1885. He graduated from the high school at Bath, Me., in 1903 and from Bowdoin college in 1907. In high school he was a member of the Phi Rho Fraternity, associate editor of the school paper, member of the 1903 interscholastic debating team, vice president of the senior class and was awarded first prize for excellence in composition during the four years. In college he was a member of the Zeta Psi Fraternity, of the History

Club, the Lincoln County Club, the Bowdoin Debating Council and the Christian Association. He was an alternate in the Bradbury prize debate in 1906 and was elected to the Bradbury prize debating team in 1907. He won the first prize in the Heath-Whitmore prize debate in 1906. He was secretary and treasurer of his class in the junior year and received a provisional commencement appointment at graduation. He held about all the offices

of his fraternity and during the senior year was president and manager of the fraternity house. He delivered several memorial day addresses and lectures and last year he nominated the successful candidate for state senator at the county convention. Mr. Erskine is now attending Harvard law school and is a member of the Marshall Law Club. He is also a member of Willow Grange P. of H. and of Riverside Lodge F. A. M.

UPBUILDING THE MERCHANT MARINE.

BY L. M. ERSKINE.

During the last decade the people of the United States have become aroused to the fact that there is no American Merchant Marine. They have seen ship after ship forced out by foreign lines, and market after market narrowed to American goods because of the lack of American transportation, until at length they are demanding the rehabilitation of the American Merchant Marine, in order that American products may be carried in American ships, built, manned, and owned by Americans.

As usual in all cases demanding a change of policy there has been a wide difference of opinion as to how the common goal may best be reached. Among the variety of different plans proposed only five have obtained a sufficient following to entitle them to consideration, namely:

1. The Economic or Time plan.
2. The Free Ship plan.
3. The Free Trade plan.
4. The Direct Subsidy plan.
5. The Discrimination plan.

The Economic or Time plan is that generally advanced by economic writers. In substance, it states that the withdrawal of American capital from foreign shipping was caused by the higher rate of interest afforded by investment in internal developments, and that when our internal development shall have reached the point where the interest return is not greater than the interest return from foreign shipping capital will turn once more towards the sea. Indications of this tendency they profess to see at the present time, and this view is given some credence by the recent Morgan American Ship Merger whereby American capital has become largely interested in the chief trans-Atlantic lines.

In opposition to this view it is only necessary to say that the economists consider the question solely from an economic basis, disregarding the additional navy power which a Merchant Marine gives. Moreover, such a plan disregards the unanimous demand of the people for the prompt creation of a Merchant Marine. Though this plan might work itself out in the process of time, since it has seemed too uncertain and indefinite for any consideration by the Merchant Marine Commission it is useless to dwell on it further.

The Free Ship plan is based on the argument, that Americans should have the right to purchase ships abroad and operate them under the American flag with the same privileges as American built ships. Against this it is sufficient to say that such a policy is in the highest degree disastrous for both economic and political reasons. Economically it means the sending of a large amount of money to foreign lands, furnishing a market for foreign materials and labor, all of which is engaged in deadly competition with us, the closing of our ship yards, with the result that the build-

A FEW TIPS ON GEOMETRY.

Geometry is the science which treats of the description, properties, and relation of magnitudes in general, of which there are three kinds or species, viz.: A line, which has only length without either breadth or thickness; a superficies, comprehended by length and breadth; and a solid which has length, breadth and thickness.

A *point*, considered mathematically, has neither length, breadth, nor thickness.

A *line* has length without breadth or thickness.

A *surface* has length and breadth.

A *solid* has length, breadth and thickness.

A *straight* or *right* line is the shortest distance between two points on a plane surface.

The *chord* of an arc is a straight line joining the ends of the arc; it divides the circle into two unequal parts, called segments, and is a chord to them both.

The *complement* of an angle is what it lacks of 90° ; the complement of the angle 50° is 40° .

The *supplement* of an angle is what it lacks of 180° ; the supplement of the angle 50° is 130° , and so on.

A *great circle* of a sphere is a section of the surface by a plane which passes through its center; such as the equator and a meridian.

A *small circle* of a sphere is a section of the surface by a plane which does not pass through its center; a parallel of latitude, for instance.

All great circles of a sphere have the same radius. All great circles bisect each other.

The extremities of that diameter of the sphere which is perpendicular to the plane of a circle are called the poles of that circle. In the case of a small circle the poles are named the adjacent pole and the remote pole. All circles of a sphere that are parallel have the same poles. All points in the circumference of a circle are equidistant from the poles. In the case of a great circle, the poles are 90° distant from every point of the circle.

Assuming any great circle as a *primary*, all great circles which pass through its poles are called its *secondaries*. All secondaries cut the primary at right angles. A great circle may be drawn through any two points on the surface of a sphere. The shortest distance between any two points measured on the surface of a sphere is the arc of the great circle joining them. See Great Circle Sailing.

ing of ocean going ships outside of a limited number of battleships would become a lost art in America. Politically it means that we should be deprived of the force of skilled artisans upon whom we must rely to repair our ships in time of war, with the inevitable result that our fleets would be driven from the seas. Granting, however, that these objections, either of which is sufficient to condemn this plan, were inoperative, yet



MR. L. M. ERSKINE.

one great bar still remains; the Merchant Marine could not be operated under the American flag, at the present time, without some government aid, which effectually disposes of the Free Ship plan.

The Free Trade theory is that the free importation of all products would equalize the first cost of building vessels in Europe and America, and that the supposed increased trade would give freight at a fair rate to a reasonable number of American vessels. In answer to this it is only necessary to say that an increase in foreign trade cannot be expected to increase our shipping materially, for with an increase in foreign trade of over 600 per cent our shipping has constantly decreased until now only 8-10 per cent is carried in American bottoms, whereas the ratio formerly stood as high as 96 per cent. Moreover, building material for ships designed for the foreign carrying trade has been duty free for some years. Free Trade cannot in any way change the differences arising from the higher wages of American artisans and seamen, unless we come to the

European scale of wages, which no true American desires, nor will it in any wise help American vessels to compete with foreign subsidized lines; which, as in the case of the Cunard line, was instructed to freeze out the competing Collins American line at any cost and the Imperial treasury would foot the bills.

The Direct Subsidy plan is the policy advocated by the majority of the Merchant Marine Commission of 1905, the essential principle of which is that the government should pay ships engaged in foreign trade a sufficient amount to enable them to compete with foreign ships on the same line. This plan has been opposed as unconstitutional because it is legislation for the benefit of a particular class for which the whole people must be taxed. The feeling of the people on the subject which up to this time seems to have been reflected in the National House of Representatives is well summed up in the oft-repeated phrase, "No man should receive pay from the government for running his own business." Perhaps the most serious objection is that, like the Protective tariff, originally designed to protect our infant industries from the destructive competition of foreigners, who then controlled our industry just as they now control our shipping, direct subsidies can have no end or limit. If the Direct Subsidy plan is adopted, when it should seem wise to discontinue or lower them the same difficulty would be met as now confronts Congress, when American companies deliver steel ship plates in British yards \$15 less than Americans can buy the same plates, yet Congress has thus far been powerless to act, such is the power of vested interests. These reasons have been sufficient up to this time to prevent Direct Subsidy legislation.

The Discrimination plan is that advanced by the minority of the Merchant Marine Commission. It is, in effect, the giving of a slightly lower rate of tariff on goods imported in American vessels, which would assure our foreign going ships of a return cargo. This, the minority claim, would go far towards settling the question of carrying our own exports in our own bottoms. Against this plan it is opposed that it would be necessary to abrogate several commercial treaties with foreign powers which might result unfavorably for us. Moreover, 40 per cent of our imports are now on the free list, and to institute discriminations would increase dutiable goods against which there is a strong prejudice.

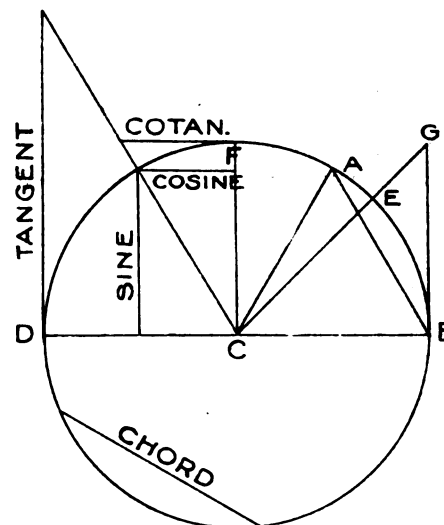
After carefully considering the advantages and disadvantages of the five plans set forth above we are convinced that a system of direct subsidies administered by a permanent Merchant Marine Commission is the one best suited to build up our Merchant Marine. This Commission should be composed of the Secretary of the Navy, Secretary of Commerce and Labor, and the Postmaster General, with four other members appointed by the President of the United States. It should be permanent and non-partisan. It should have power to establish new lines and determine the amount of subsidy necessary, as well as to increase or decrease the subventions to established lines, as business conditions or competition may require. To this end the Commission, or any member of it, if acting for the board, shall have power to examine the books and accounts of all subvented lines at any time. As the highest board of marine officers, the Commission shall devise and formulate rules for the inspection, classification, tonnage measurements, etc., of all foreign going ships, the same to be made the standard basis for insurance rates by United States companies.

The advantage of such a system lies in the fact that it places the regulation of foreign shipping and the distribution of subsidies in the hands of a permanent committee, with full powers of investigation of the accounts of subvented lines, with the result that the amount of subsidy granted will be only so much as is demanded by the exigencies of each particular case, and that when a line is able to run without government aid the subsidy will be entirely withdrawn.

Such a system involves no danger of complications arising from the abrogation of treaties. It can affront no nation now largely engaged in shipping, because subsidies are employed by all important nations at the present time. It will not be granted nor continued where it is not necessary to the maintaining of an American line. It will be used wisely because the permanent commission will thoroughly understand the conditions and demands of each case. The presence of the three secretaries

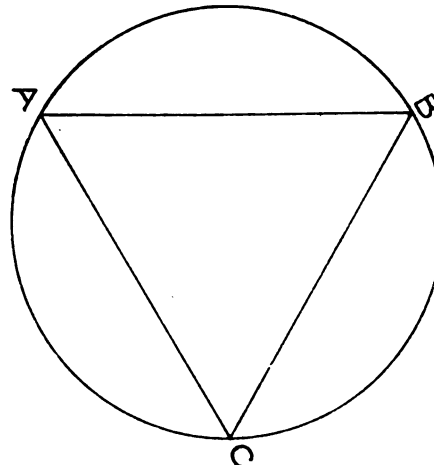
The *sine* of an arc is a line drawn from one end of the arc perpendicular to a diameter drawn through the other end of the same arc.

The *tangent* of an arc is a right line



drawn perpendicular to the diameter, passing through one end of the arc, and terminated by a line drawn from the center through the other end of the arc; thus BG is the tangent of the arc BE. See chord. BA is a chord of 60°.

To make an angle of 45° take the length of the radius, between the



points of the dividers, of the circle you are working from, and draw a tangent of the same length, and from the end of the tangent draw a straight line to the center of the circle, BG and CG. BCE and ECF are angles of 45° each.

To make an angle of 60°, take the radius in the dividers and lay off the distance at points of intersection with the circumference, the line so drawn represents a chord of 60°. If two lines be drawn from the ends of this chord to the center of the circle, the inclination of the two lines thus

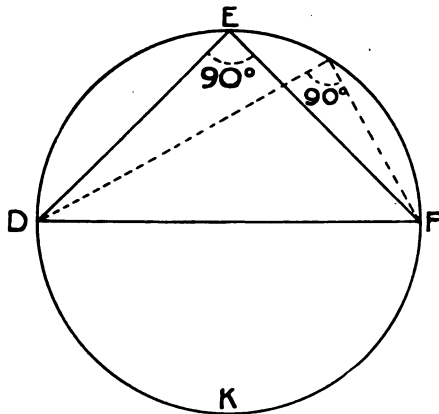
upon the board will safeguard the interests of the navy, of the postoffice, and of commerce and labor. In return for its expenditures the government will have ready at hand a fleet of auxiliary cruisers and transports constructed with a view to such possible use. The people will know that their demand is being answered by the creation of a Merchant Marine under the supervision of a board of trained experts, and with only such help from the government as is actually necessary.

All this must depend upon money for its accomplishment, and here we meet the opposition which has always been raised against subsidies in the United States. We have set forth a fair plan. We have provided that experts shall determine what lines shall be created, thus insuring the government against useless expenditure on unnecessary lines; that the amount of subsidy granted shall be determined by actual examination of the accounts of subvended lines and be only so much as is necessary to keep the American line running; that the ships subvended shall be so constructed as to be available for auxiliary cruisers or transports without undue cost or delay, and that insurance rates shall be based on the government classification and inspection, thus insuring the ship companies fair and equitable rates. With these safeguards, we believe the United States government, with its excess of \$26,000,000 of receipts beyond expenditures in 1905, can afford to listen to the demand of its people for a Merchant Marine and appropriate at least \$5,000,000 yearly to carry out the plan set forth above, and solve the problem of how to build up our Merchant Marine.

drawn will form an angle of 60° , as BCA.

An angle in a segment greater than a semi-circle is less than a right angle.

Thus, if ABC be a segment greater



than a semi-circle, the arc, AC, on which it stands, must be less than a semi-circle, and the half of it less than a quadrant or a right angle; but the angle ABC in the segment is measured by the half of the arc AC; therefore it is less than a right angle.

An angle in a semi-circle is a right angle.

For since DEF is a semi-circle, the arc DKF must also be a semi-circle; but the angle DEF is measured by half the arc DKF, that is, by half a semi-circle or by a quadrant; therefore the angle DEF is a right one.

An angle in a segment less than a semi-circle is greater than right angle.

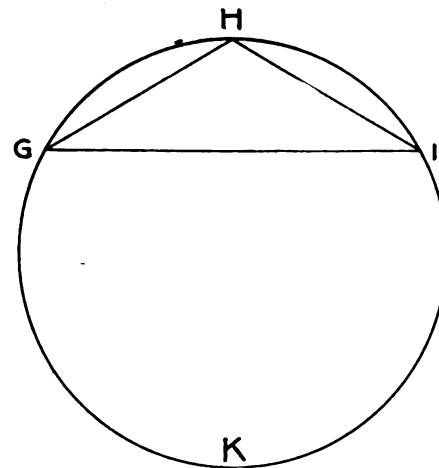
Thus, if GHI be a segment less than a semi-circle, the arc GKI on which it stands must be greater than

a semi-circle, and its half greater than a quadrant or right angle; therefore the angle GHI, which is measured by half the arc GKI, is greater than a right angle.

Any angle at the circumference of a circle is equal to half the angle at the center, standing upon the same arc; or the angle at the center of a circle is double of the angle at the circumference upon the same base.

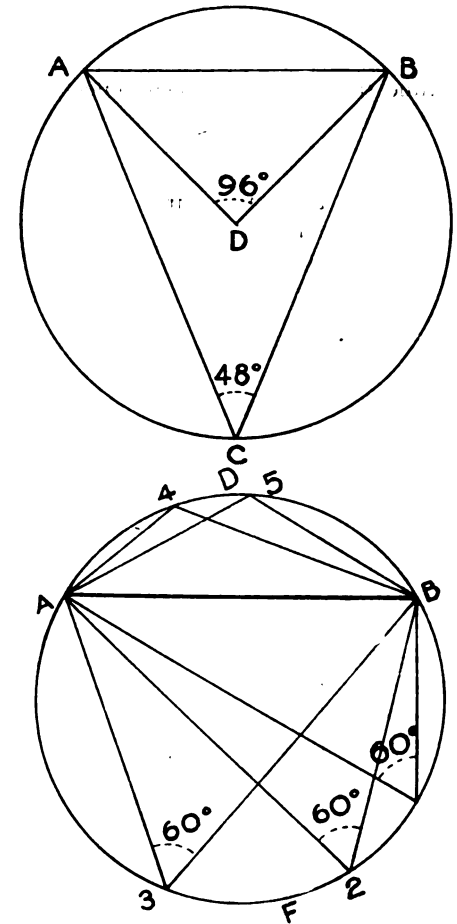
Since the angle subtended at C, by the base AB is 48° , the angle at the center D, subtended by the same base, must be twice 48° or 96° .

Euclid tells us that from any point in the circumference on the same side



of the segment, as AFB, the points AB, will subtend the same angle. Anywhere on the circumference of a circle, select two points, as A and B and connect them with a straight line; this line is termed the chord of the arc ADB. ADB is one segment of

the circle; AFB another. It is evident that the angle AFB contains precisely the same number of degrees as the angle A 2 B and A 3 B. This being the case, it is evident that the circumference AFB is the measure of a constant angle, which is termed "the angle in the segment, AFB," and supposing A to be a lighthouse and



B a prominent headland, and an observer getting the angle must be somewhere on the circumference AFB. The same thing may be said of the segment ADB, the angle A 4 B being the same as A 5 B.

The Mississippi River Commission is at present making a tour of the Mississippi. The commission consists of Col. W. H. Bixby, president; Capt. G. R. Lukes, Col. H. Bixby, president; Capt. G. R. Lukes, Col. Wm. P. Roessel, Lieut. Col. J. G. Warren, J. A. Ockerson, H. P. Richardson, H. S. Ritter, Capt. W. D. Connor, Major J. T. McIndoe and Capt. Clarke S. Smith.

The Goldschmidt Thermit Co., 90 West street, New York, has just issued a bulletin on Butt-Welding wrought iron and steel and pipes and rods by the Thermit process. It is nicely printed, well illustrated and will be sent to anyone interested upon request.

The Institution of Naval Architects

The annual spring meeting of the Institution of Naval Architects commenced at 11:30 on Wednesday, the 8th inst., and concluded on the 13th. As in former years, the meeting took place in the hall of the Royal Society of Arts, London. The Earl of Glasgow, G. C. M. G., LL.D., president, was in the chair.

The meeting opened with the reading of the annual report of the council by the secretary. The report was as follows:

The council has pleasure in submitting their annual report upon the progress made during the past year. The total number of new candidates elected during that period was 137, but, owing chiefly to the numerous losses by death, the net gain in membership is reduced to 38, the actual numbers on the books being: Honorary members, 12; members, 1,097; associate members, 118; associates, 476; students, 93; total, 1,796.

The treasurer's report shows a satisfactory financial statement for the past year.

The council has received with regret the resignation of the Earl of Glasgow, G. C. M. G., from the office of president, which he has occupied with so much distinction and advantage to the institution since 1901. The council desire to express their cordial thanks to Lord Glasgow for his services during his period of office, and their high appreciation of the courtesy and tact which his lordship has invariably displayed while presiding over the meetings of the council and of the institution.

A summer meeting was held in Bordeaux last June jointly with the French, German and American Societies of Naval Architects. The meeting constituted an international congress of naval architects, under the joint presidency of Lord Glasgow and Monsieur Bertin, and was attended by delegates from the principal maritime countries. Owing to the large number of papers contributed, it was only found possible to include in the "Transactions" of each institution those papers which were read by its own members. The reception accorded by the local authorities and the influential residents was most cordial, and the Maritime exhibition, with its valuable collection of British ship models, formed an interesting feature

of the meeting. Visits were paid to the various ship building and engineering works in the neighborhood, notably to the Chantiers de la Gironde, Messrs. Lyle and Bacalan, and also to the famous vineyards of Chateau Margaux. Mention must also be made of the subsequent journey by special train to the great steel and armour plate works of Messrs. Schneider and Co. at Le Creusot, where a thorough inspection of the works was made, and a most hospitable welcome was accorded to those members of the congress who were able to make the trip.

The council has, under Rule XI, elected as honorary vice presidents, Dr. F. Elgar, F. R. S., treasurer of the institution, and James Dixon, chairman of Lloyds Register Society.

The Institution of Naval Architects scholarship, which was competed for last year, has been awarded to A. M. Robb, of Messrs. G. L. Watson & Co., Glasgow, on the result of the examinations held by the board of education in the prescribed subjects, and the successful candidate is now pursuing his studies at Glasgow University.

The council has received from A. F. Yarrow, vice president, an offer to defray the cost—up to £20,000—of an experimental tank for research purposes to be erected at the national physical laboratory, Bushey, provided the expenses of maintenance for the first 10 years are assured; and suggesting that the ship builders and ship owners of the country should be invited to guarantee the necessary amount for that purpose. Mr. Yarrow's munificent offer has been gratefully accepted subject to the conditions under which it is made, and a committee will be formed in order to take such steps as may be necessary to carry the scheme to a successful issue.

The council have pleasure in announcing that they have awarded an institution premium to Lionel Clark for his paper on "Modern Floating Docks," and another to J. Hamilton Gibson for his paper on "Torque of Propeller Shafting: Some Investigations and Results."

The president then read the following address: Gentlemen, in the annual report of the council you have heard a very satisfactory account of our work during the past year, and I am happy to be able at the opening

of this, our 49th session, to congratulate the members of the institution upon its flourishing condition from every point of view. The accession of new members continues to strengthen our ranks, especially on the professional side, notwithstanding the more difficult conditions of entry, and I am pleased to announce that the list of new candidates that have just been elected is the largest yet dealt with at any spring meeting of the institution. This is the more satisfactory as the last two decades have seen the birth and growth of a number of societies, in France, Germany, the United States, and elsewhere, on identical lines with our own, while the allied institutions at home continue to flourish and supply the needs of local centers where interchange of ideas, and discussions on topics of professional interest, can be carried on during the major portion of the year. Our institution is peculiar in that so large a proportion of its members being resident either in the outports or abroad, it would be difficult to bring them together otherwise than is now done, at the annual gatherings in London, and at the occasional summer meetings which have formed a distinctive feature of our sessions for many years past.

Our meeting at Bordeaux last year has already been alluded to in the annual report, but I should like to emphasize our appreciation of the cordiality of our reception there and at Le Creusot, a feeling which was generally expressed on all sides by those who attended the meetings and the subsequent visits. The forthcoming Franco-British exhibition in London will, I hope, further cement the bonds of friendship already existing between the two nations, and give some of our great engineering firms an opportunity of reciprocating the welcome and showing our friends from across the channel and elsewhere the products of their skill and enterprise.

That the past year has not been one of continuous expansion in the ship building and marine engineering trades is now a matter of history. Indeed, a reaction from the exceptional activity of the previous few years had been foreseen and predicted by those best acquainted with the prevailing conditions. To those who follow year by year the progress of these industries it must be obvious that the laws

of supply and demand are as inexorable as ever in governing the fluctuations of trade. Years of high freights and low prices of materials create an abundance of ship building orders which go to swell the output of the following year or two, but an inevitable reaction follows when the demand for freight carriers slacks off and the completion of orders on hand leaves building slips empty and shops running half time. But in addition to the causes operating in, so to speak, a normal manner, there came last year very suddenly, though not perhaps entirely unexpectedly, the financial panic in the United States, which entailed an awkward period of stringent money and high rates, and caused much uneasiness throughout the financial circles of the world. This naturally had its immediate effect upon trade generally, and the ship building and engineering interests suffered with the rest. Then, labor troubles inevitably follow closely in the wake of contraction of business. The workmen, willing enough to take advantage of the flood-tide of prosperity, find it difficult to realize that the ebb has also to be reckoned with, and often refuse to accept the inevitable reduction in wages that must take place if work is to be carried on during slack times. It was recently stated that apart from obsolete and new berths, over 50 per cent of the ship building berths on the northeast coast were vacant, and the outlook at that time was extremely unpromising. Since then the strike has assumed very formidable proportions, and has caused much distress in the neighborhood through loss of orders and consequent employment.

In the aggregate, the falling off in tonnage launched during the past year represents 10 per cent of decrease upon the totals of the previous year, which was the highest on record for merchant ships. The decrease in tonnage under construction at the close of the year was, however, much greater, there being nearly 20 per cent less work on hand than that at the close of 1905. One feature of the year's ship building has been the proportion of vessels built for abroad, which were nearly 50 per cent above the normal supply of recent years. This demand has now been mostly met, and the outlook from this point of view is not much better than from that of home consumption.

But if the year's records have proved disappointing as regards quantity, the same cannot be said of the nature of the work turned out, more

especially if we include in our comparison ships whose trials took place during the year under review. We have during that period witnessed some remarkable developments in maritime power, in a mercantile as well as a naval sense. The rapidity with which improvements in the design of ships or the means of propulsion have succeeded each other during the past decade has culminated in the achievements of the past 12 months. The notable success of the great Cunarders now running with regularity on their ocean course has reflected the greatest credit upon the constructive powers of our builders of high-speed ocean liners. No hitch occurred to mar their continuous progress from the building slip to the quay side, and their performance since the start bears splendid testimony to the care with which the details were worked out and obstacles were foreseen and surmounted. The fullness of time has once again brought the dreams of early pioneers into the region of accomplished fact, and the brilliant but costly experiments of Brunel and Scott-Russell have been followed by the great high-speed vessels that have reduced the Atlantic passage to the present minimum of time and discomfort. Times have changed since Dickens' first memorable voyage across the Atlantic, and still more since Dr. Johnson described a ship as "worse than a gaol." "There is," he says, "in a gaol, better air, better company, better convenience of every kind, and a ship has the additional disadvantage of being in danger!" What would this splendid grumbler have thought of the *Lusitania* and *Mauretania*?

The abnormal displacement of these vessels, which swelled the returns of tonnage launched during 1906, make the biggest ships of the past year appear small in comparison, yet the number of vessels under construction of over 10,000 tons is still relatively high, and the average size is, generally speaking, on the increase.

Special types of vessels for particular classes of trade continue to claim the attention of naval architects, and boldness and ingenuity have characterized the designs of recent freight carriers. Each year sees fresh advances made towards economy in weight of material, the freeing of hold spaces from pillars or other obstructions, the increase in the working length of hatchways, and the rendering of vessels more seaworthy when in light condition by the better disposal of water ballast. The north east coast

has always been prominent in giving attention to these matters, and the very large and increasing output of that type of cargo-carrier which has become a specialty of the district is significant of the success it has met with among ship owners. A new form of longitudinal construction, which has been recently designed, and for which special advantages are claimed, forms the subject of one of our papers at these meetings.

In marine engineering the past year has been noteworthy for the continued and increased employment of the steam turbine for various classes of ships, both naval and mercantile, and attention is still focussed upon this form of engine. Its success in the navy, where it has now entirely superseded the reciprocating engine, has been very marked of late. The first lord of the admiralty, in his explanatory statement, says that "all war vessels at present under construction are being fitted with machinery of this type, which has, without exception, proved very successful in the vessels which have been so fitted." The adoption of the turbine has rendered possible that increase of speed which in every type of warship appears as one of the most conspicuous features of recent construction. The 21 knots of the Dreadnought has become the general standard of battleship speed in other navies as well as our own; the modern cruisers, notwithstanding their heavy armor and armament, are enabled to do their 25 knots an hour, while in the torpedo boat and destroyer class some very remarkable results have been obtained with turbine engines and oil fuel during the past few months. The so-called "Tribal" class of destroyers has achieved marked success in this respect. Designed for a speed of 33 knots, they have in most cases exceeded this, one of them—the *Tartar*—having attained not less than 37 knots on one of her measured-mile runs, while the average speed of this boat on a six hours' continuous run worked out at 35.36 knots. In the case of these destroyers it must be remembered that the conditions of trial were exceptionally severe, and that the fuel consumption came out satisfactory at both full and cruising speeds.

A still speedier though much larger type of destroyer—the *Swift*, of 1,800 tons, and with a designed speed of 36 knots—was recently launched at Birkenhead, and will shortly be undergoing her trials. It is confidently anticipated that she will, when completed, be the

fastest vessel afloat. What is even more important, however, than mere trial speed, is the maintenance of speed on service, and from the results obtained it is hoped that these recent types of torpedo vessels will be more successful in this respect than some of their earlier prototypes.

The exclusive use of oil fuel, which has become general in the boilers of these vessels, is an interesting feature of their design, and the engineering department at the admiralty are to be congratulated on having successfully overcome the difficulties connected with the use of this fuel—difficulties which at one time appeared almost insuperable. How far reliance upon oil fuel may prove to be rightly placed, in view of the limited sources of supply, and their general location outside of his majesty's dominions, is a point upon which there appears to be some divergence of views, but the matter may, I think, be safely left to our technical advisers.

Before leaving the subject of marine engineering, I would call attention to the revival of interest in the superheating of steam for use in marine engines. Constant research along lines likely to lead to economy in marine propulsion has caused engineers to give attention once more to this problem, which was first taken up some 50 years ago, but without reaching a satisfactory solution. New conditions, however, have since arisen, and superheaters have recently been designed for use on board ship which appear to answer the requirements on service, and conduce to considerable economy of steam, and consequently of fuel. A paper on this subject is to be read by one of our distinguished foreign members, which I am sure, will be received with interest, and will, I hope, throw further light upon the matter.

A few remarks upon the navy estimates that have recently been laid before parliament may not be out of place. The navy estimates this year have been awaited with more than usual interest. The sea of controversy that has raged of late about the rock of British naval supremacy has created a feeling of uncertainty with regard to the measures that were being adopted to ensure the maintenance of our navy at its relative standard of power and efficiency compared to the other navies of the world.

The increasing activity in naval construction abroad, and the extension and improvement of ship building resources outside the United Kingdom, call for the serious attention of those responsible for the naval defenses of

this country. In the United States there are at the present time 29 warships building, as compared with 22 a year ago. These include seven battleships, two armored cruisers, three scouts, eight submarines, and five destroyers, and represent a total money value of over £8,000,000, exclusive of cost of armor and armament. The German program, which is designed to cover a period of 10 years' consecutive building policy, allots an average of over £10,000,000 per annum to new construction and armaments, and provides for four capital ships a year to be laid down for the next few years. In France a comprehensive program is being worked to whereby in 12 years' time that navy would possess 38 modern battleships, 26 armored cruisers and scouts, 279 destroyers and torpedo boats, and 131 submarines. In Russia the reconstruction of the navy is being actively pursued.

In the face of facts such as these it must be admitted that the navy estimates recently presented to parliament are remarkable for the moderation they display. The total amount asked for is £32,319,500, being an apparent increase over last year's total of some £900,000; but when allowance is made for the surplus of stores in hand this figure is reduced to a net increase of only £14,000. The ship building vote, which, more directly than any other, concerns the members of this institution, is actually less than it was last year by over £500,000—and £4,100,000 less than the corresponding vote in 1904, since which time it has been steadily decreasing. When it is remembered that the cost of individual units has during this period increased enormously, it is obvious that the number of ships of each class which can be built from this year's program must consequently be small. Two large armored ships—one a battleship, the other a cruiser—six fast but small protected cruisers, 16 torpedo-boat destroyers, and a number of submarines—such is the total amount of new construction proposed. It is quite evident from this program that the axiom laid down by the board of admiralty three years ago with regard to the necessity of building each year four large armored ships has been abandoned—at any rate for the time being. Moreover, of the sums now asked for the government only propose spending a very small proportion on new ships during the current financial year.

No adequate reason has, so far as I am aware, been vouchsafed for this

change of policy. It has been stated that our present position is unassailable, and that our facilities for rapid construction are a valuable asset. Both those contentions are true for the moment. But our position will only continue to be unassailable if we take the necessary steps for maintaining it; and as regards the value of speed in construction, this must not be overrated. It is only of value if others do not achieve it. The monopoly—if it can be so called—of rapid building may be ours today, but not tomorrow, for no unprotected monopoly can exist for long in the manufacturing world. There is, on the face of it, no intrinsic reason why other nations whose yards are equipped with modern plant and whose demand for skilled workmen is kept fully supplied should not turn out warships in as short a space of time as our own dock yards or private builders. Our relations with foreign powers—notwithstanding occasional attacks of newspaper fever—are fortunately friendly, and for the moment no serious complications overshadow the political horizon. But no government can afford to confine to the immediate necessities of the moment the demands which it must make upon the resources of the nation to provide for the needs of the future. And yet this is apparently what is being done at the present time. "Sufficient unto the day is the evil thereof" appears to be the principle upon which this year's naval estimates have been based. I venture to say that no more mischievous principle could be applied to our national defenses. A hand-to-mouth policy is one that can only increase our difficulties in the near future, and a very heavy cutlay will be needed before long if our standard of naval strength is to be maintained. That standard is admittedly on a rapidly falling gradient as regards new construction at the present moment.

No one doubts for a moment that, should urgent necessity arise, the government of the day, to whatever party it might belong, would readily vote such sums as its official advisers considered needful. The country would not be satisfied with anything less. But to found a policy of procrastination upon the uncertain value of this 11th-hour remedy is surely to jeopardize our naval position, and saddle the future with an unknown and possibly unlimited liability.

I have been led to speak strongly upon this point, as I feel convinced that the only real economy possible in naval affairs is that which is consistent with the maintenance of our naval su-

periority. With the resources at their disposal it must be admitted that the present board of admiralty have displayed great energy in carrying through various measures for maintaining our naval construction in the forefront of the navies of the world, and the wisdom of a forward policy in the constructive and engineering departments at Whitehall has been fully vindicated. The successful introduction of far-reaching changes in mechanical forms of propulsion is indicative of the high standard of technical knowledge and practical experience attained at our great naval centers. In our private ship and engine building establishments and armor plate works that standard is nowise lower; the mechanical plant in both government yards and private works has of late years been brought very generally up to date; our supplies of skilled workmen are still large enough to meet all possible demands, and their ranks are being continually reinforced through the increased facilities now available for technical education. Such factors as these are national assets upon which we may base the estimate of our resources in the domain of naval construction. Provided only that the necessary funds are voted by parliament, we need have no fear for the quality of the ships and material that contribute so largely to the maintenance of our supremacy afloat.

Before proceeding to the business of the meeting, I wish to take this opportunity of alluding to a matter of more special interest to myself. It has now been my privilege to address you from this chair for upwards of seven years, and, much as I have valued the honor of presiding over the interesting meetings it has been my good fortune to attend, I feel that the time has come when a change in the occupancy of the presidential chair might well be made. The calls upon my time seem to increase rather than diminish as the years roll by, and make it difficult for me, living at a distance from London, to attend the meetings of the council as frequently as I should like to do. Moreover, there is no doubt that the vitality of an institution such as ours is best kept up by occasional infusion of "new blood" at the head of its affairs. It is with feelings of real regret that I came to this conclusion, which I have, as stated in the annual report, already communicated to the council. I find it hard to put it into words my feelings on quitting the office which I have esteemed it my highest privilege to have held for the last seven years, but I can truly

say that I look back upon my period of office with unmixed pleasure. I have had from my colleagues on the council the advantage of their unvarying support, kindness, and consideration, and from the secretary and his staff able and willing assistance at all times. I can bear testimony to the harmony and goodwill that have characterized our meetings, and I can recall, I am happy to say, no untoward incident during the period of my connection with this institution.

I am well aware of my own limitations, but as far as lay in my power I have endeavored to further the objects for which this institution was founded. I may, perhaps, be permitted, in taking leave of the office of president, to observe with satisfaction that the institution, judged by its well-attended meetings, by the valuable papers and discussions recorded in the "Transactions," and its ever-growing membership, continues to fulfill its useful function and to attract members from all those parts of the world where ship building and marine engineering claim attention. That it will continue to do so under able guidance of a council so fully representative of the industries with which it is associated, I have no doubt whatever. My interest in its future will remain unabated, and it is with feelings of entire confidence in their realization that I will conclude these remarks by offering my heartiest good wishes for the success and prosperity of the Institution of Naval Architects.

ATLANTIC COAST GOSSIP.

Office of the MARINE REVIEW,
Room 1005, No. 90 West St.,
New York City.

By making the passage from Queenstown to New York in 4 days 23 hours and 59 minutes, the Cunard liner *Mauretania* established a new record over the long route on her last voyage westbound. The record previously held by the *Lusitania* was exactly five days. During the voyage the *Mauretania* maintained an average speed of 24.08 knots.

The gross tonnage of the fleet of the *Compagnie Generale Transatlantique*, which on Dec. 31, 1904, was 171,127 tons, had increased to over 225,305 tons in December, 1907. The average age of the vessels also, had fallen from 18 years 8 months to 8 years 8 months in the same period.

The five-masted sailing ship *Preussen* has been an object of no little attention since her arrival at New York. It is estimated that 3,000 persons vis-

ited her on Easter Sunday alone, the majority of whom were of the same nationality as the vessel, which was open that day for inspection.

The Canadian Pacific steamer *Mount Temple*, which had been stranded on the ledges at Ironbound Island since Nov. 30, was floated last week and proceeded to Halifax under her own steam. It is estimated that the salvagers will receive about \$200,000.

A committee representing the New York Maritime Exchange waited upon the president April 16 to urge a pardon for Capt. W. S. Van Schaick of the *General Slocum*. Capt. Van Schaick is undergoing a 10-year sentence for negligence in connection with the *Slocum* disaster. The committee was referred to the attorney general for a report upon the case.

A wireless message from the *Kronprinzessin Cecilie*, conveying the information that the steamer had lost one of her propeller blades off Nantucket lightship, was received at the offices of the North German Lloyd line last week. Owing to proceeding under reduced speed her arrival at Plymouth was looked for about one day later than schedule.

The trial of the new *Oklahoma*, the largest bulk oil carrier ever built in this country, proved a success, the vessel developing over 12 knots with fuel oil.

The new Allan Line steamship *Hesperian* was found perfectly satisfactory in her trials on the Clyde on April 16. She has been built for the service between Glasgow and Montreal. The *Hesperian* averaged 16½ knots.

The British steamship *Aral* passed a barge adrift in mid-ocean, the barge being in good condition and quite dry, on her voyage from Shields to Philadelphia. An iceberg, about 300 ft. long and 40 ft. wide, was also passed by the *Aral*.

The new 1,000-ft. steamship for the White Star Line, the construction of which is to be started later in the year, will be named the *Olympic*. It is possible that two vessels of this size will be built for the Southampton-New York service by Harland & Wolff, and probable that their speed will be 20 knots.

The *Atlanta*, the new steamship

built by Russel & Co., Glasgow, for the Austro-American Co., arrived at New York on April 18. The Atlanta has accommodations for 80 cabin and 950 steerage passengers, and is of about 5,000 tons.

The Italian steamship lines have issued a joint circular announcing a reduction in rates to Hungarian and Mediterranean ports, the new rates ranging from \$10 to \$15 lower than the reduced rates to the same points recently announced by other lines. This may be taken as showing the intention of the Italian lines to continue the fight for this trade against the German and British lines.

In a collision with a loaded freight car float in Hell Gate on April 17, the Maine Steamship liner North Star was seriously damaged on the starboard side. After the collision she continued to her dock, where the passengers were debarked. There were about 100 passengers on the North Star.

The crew of the British schooner Helen E. Kenney, which was wrecked on March 23 at Porto Cabello, arrived at New York on April 18 by the Dutch steamship Prins Frederick Hendrik. The Kenney was anchored at Porto Cabello when currents forced her on a submerged rock. The hull and cargo have been sold.

The British steamship Almeriana on her arrival reported having encountered extremely heavy weather. During a gale, which lasted 24 hours, 350 bags of creosote salts and one lifeboat were swept overboard.

The German tank steamer Burgermeister Petersen, from Shields for Philadelphia, arrived at Halifax on April 20 in tow of the Leyland Line steamer Columbian, London for Boston. The tank steamer had encountered heavy weather during the entire voyage, losing her propeller when 16 days out. She had drifted helplessly from April 9 to 18, when the Columbian came along and took her in tow. The officers of the Burgermeister report signaling another steamer on the night of April 15, the other steamer, though showing signal lights, failing to respond to their distress signals.

Through heavy weather prolonging her passage, the steamer Loyal Briton was compelled to put into Yarmouth, N. S., on Monday, to replenish her bunkers. The Loyal Briton is from Iviza for Gloucester, Mass.

The five-masted schooner George P. Hudson, which stranded on the Long Island coast on April 1, and was floated last Sunday, was beached again on Monday inside the Hook. Merritt-Chapman wrecking tugs had the Hudson in tow, but, owing to the amount of water she was making, considered it advisable to beach her till temporary repairs could be made. In hurrying the vessel into shallow water the tugs had the assistance of the steam pilot boat New York.

The British steamship Glенаen, which stranded on the Virginian coast while bound from Florida to Norfolk, and was floated on Sunday by wrecking tugs, arrived at Norfolk on Monday under her own power. She will proceed on her voyage to Genoa and Leghorn with phosphate rock from Port Tampa. While on the Cobb's Island bar 250 tons of her cargo had to be jettisoned.

While outward bound for Havana on April 16 the Ward Line steamship Monterey collided with the Scandinavian-America Line steamship United States, outward bound for Copenhagen, in the main ship channel of New York harbor. The United States received the sharp bow of the Monterey with terrific impact on her starboard side amidships, and was cut open both above and below the water line. Her engine room was flooded. The bow of the Monterey was badly damaged, but the liner was able to return to her berth. Immediately after the collision the United States was aground, where she remained all night with her passengers aboard, her water-tight bulkheads preventing the water extending beyond the engine room. The passengers of both vessels were forwarded by other vessels of the Ward and European lines.

Cablegrams from Bremen state that the North German Lloyd Co. has decided to have some of the slower steamers in its New York service touch at Halifax, N. S., the change to be put in operation about the middle of next month. This will mean competition for the Allan and other trans-Atlantic companies trading to British North America.

Thomas McCosker & Co., Baltimore, Md., launched last week a tug for P. Dougherty Co., of Baltimore. The tug is 141 ft. 9 in. long by 26 ft. 2 in. beam and 14 ft. depth of hold.

NEW JAPANESE TURBINE LINER.

The new turbine liner Tenyo Maru, built for the Toyo Kisen Kaisha, went into commission this month and will be followed by Chiyo Maru in June.

The Tenyo Maru was built at the Mitsubishi Dock Yard & Engine Works, at Nagasaki, where the Chiyo Maru is nearing completion. Both vessels have been built to conform with Lloyds exacting requirements and the equally stringent rules laid down by the Japanese government. To insure adherence to these high standards of workmanship, representatives of Lloyds and of the government have supervised and passed upon every detail in the construction of both vessels.

The principal dimensions of the Tenyo Maru are as follows:

Length over all.....	575 ft
Length between perpendiculars.....	550 ft
Molded breadth	63 ft
Molded depth to upper deck.....	38 ft. 6 in
Molded depth to shelter deck.....	46 ft. 6 in
Gross tonnage	14,000 tons
Displacement	21,000 tons
First class passengers.....	275
Intermediate passengers	54
Steerage passengers.....	800
Type of engine.....	Parsons turbine
Boilers	13 cylindrical
Three shafts	
Designed speed	20 knots
Cargo capacity	8,000 tons

In general design the Tenyo Maru is strictly modern. To the unseasoned traveler the absence of vibration will be one of the liner's chief recommendations. The turbines do their work in silence and without communicating the tremor of their exertion to the whole hull. The use of liquid fuel does away with the dirt, delay and annoyance of coaling ship.

The Tenyo Maru's movement across the Pacific will be a swift but peaceful glide. As the liner makes her smokeless way through tropic and semi-tropic waters the passengers will find on every hand means to pass the time in comfort and enjoyment. A voyage on the Tenyo Maru may be a perfect rest cure or a jolly good time, according to the desire of the passenger. For those who prefer jollity, there is plenty of room to be gay without the sound of their frolic disturbing the more peacefully inclined.

To sum up a few of the Tenyo Maru's attractions.

There are six decks which afford 5,400 feet of promenade area and ample room for living quarters of liberal proportions.

A new system of ventilation insures fresh air in every stateroom in every kind of weather.

An electric fan in every room insures comfort when the temperature

climbs, and a system of heating controlled by the occupant of the room gives the passenger immunity against cold.

An electric light in every berth permits those so inclined to read in bed.

There is a well equipped gymnasium.

There is a nursery where the children may romp to their hearts' content in perfect safety.

There is an auxiliary saloon where private parties may be given.

A system of wireless telegraphy keeps the traveler posted on world happenings, gives him a means of communicating with his friends or business associates ashore and enables him to make hotel reservations and other arrangements while still far out at sea.

There is a dark room where the amateur photographer will find facilities for doing everything from loading a plate holder to enlarging the snapshot he just made of those gorgeous clouds or that pretty girl.

The after part of one of the decks is especially designed and set aside for dancing. A deck piano is installed there.

The after-dinner smoke may be enjoyed on the Tenyo Maru without deserting the ladies for the smoking room or dragging the ladies on deck, for the liner has a lounging room where after-dinner coffee will be served and where "he" may pay his devotion to Lady Nicotine and at the same time enjoy "her" company.

There is a smoking room of course and a ladies' room, each peculiarly and artistically adapted to its purpose.

In brief, the Tenyo Maru offers all the comforts of home and many comforts found in few homes; all the steadiness of land, with a constant change of air and scene.

THE GREAT TIER OF DECKS.

The Tenyo Maru's six decks are denoted as follows:

Boat deck known as A deck
Promenade deck known as B deck
Shelter deck known as C deck
Upper deck known as D deck
Main deck known as E deck
Lower deck known as F deck

A and B decks are devoted exclusively to first-class accommodations. C deck is the weather deck. On the fore and aft extremities it carries the cargo gears. Amidships, in a deck house 280 ft. long, are first-class cabins and the dining saloon, the latter a gorgeous dream of artistic harmony and solid comfort. On D deck the intermediate passengers have their quarters. Amidships on D, however, are some first-class cabins. E and F

decks are for cargo. The shaft tunnel top forms the lower deck and bottom of after holds. The Tenyo Maru has six holds of almost equal capacity and eight hatchways.

PASSENGER ACCOMMODATIONS.

There are 96 staterooms on A, B, C and D decks accommodating 273 passengers. The height between decks is 9 ft. This additional head-space combined with the liberal area of each room adds considerably to the comfort of stateroom life.

On B deck are four suites each containing bed room, sitting room with bath room and lavatory. In the furnishing of these suites no expense has been spared and they embody all that the builder's art can give in the way of well considered luxury and artistic beauty.

In addition to these suites are several "family rooms" containing two beds and one sofa, the back of which may be turned up to form another berth. Combined with this is a comfortably furnished room with ample closet space, twin fold-up lavatory and everything else necessary to complete and make comfortable family life at sea. These rooms are designed specially for passengers traveling with their families and make possible the housing of the family in one set of rooms without the discomfort of crowding.

The ordinary staterooms on B deck are so arranged that in the daytime they may be converted into comfortable and artistic sitting rooms.

Inner rooms have been avoided except on D deck, where the staterooms have but a single berth. These single berth rooms were recently introduced on the Atlantic and have proved very popular. The berths in the staterooms on C deck may be extended 3 ft. in width.

Each berth is furnished with an eight-candlepower reading lamp. In the furnishing of the rooms brass and mahogany have been used extensively, and mattresses, carpets, upholstery, curtains, every part of the equipment in fact combine artistic beauty with the highest quality.

All alley ways and alcoves in the first-class quarters are tiled with patent india-rubber, which is soft to the tread, prevents slipping and does away with the noise.

Well lighted and perfectly ventilated lavatories and bath rooms are conveniently situated on all the passenger decks.

The intermediate quarters are located on D deck and the Tenyo Maru has accommodations for 54 intermediate or

second-class passengers. The staterooms are each provided with two berths. They are simply but comfortably furnished and in the matter of heating and ventilation are identical with the quarters of the first cabin passengers. There is a large dining saloon in the intermediate section, a ladies' room and a smoking room.

The Japanese steerage is forward and the Chinese steerage aft on E deck. The Tenyo Maru has accommodations for 800 steerage passengers. The sanitary arrangements are perfect as science can make them. The ventilation affords cubic air space far beyond the legal requirements and in cold weather the steerages are heated by the thermotank system used in the first and second cabins. Dining tables and seats are provided as required by the amended laws governing this class of travel, and the berths were made especially by Hoskins for this particular purpose.

The commissary arrangements on the Tenyo Maru are elaborate and complete. Electricity plays an important part in the culinary department. The ice making plant insures a constant supply of fresh foods in perfect condition. There are separate galleys for Chinese and Japanese steerage passengers.

On C deck is located an inquiry office for the benefit of all passengers. The purser is also situated here and on the after end of the same deck is a well-equipped surgery and hospital. There is a printing office on D deck from which will be published a daily paper containing the latest world's news received by wireless, gossip of the ship and a record of the big turbine's behavior.

For the benefit of those concerned in the transportation of freight, a brief outline of the Tenyo Maru's cargo handling equipment will be of interest. Each hatch—there are eight of them—is provided with two of Clark Chapman's winches, specially designed for the Toyo Kisen Kaisha. There are two 25-ton derricks. Twin capstans are fitted at fore and aft extremes of C deck.

The anchor cables are 2½ in. in diameter and the liner carries four Hall's patent stockless anchors. Anchors and cables weigh 90 tons.

There is telephone communication between all working parts of the ship. The water-tight doors to the numerous bulkheads with which the Tenyo Maru is provided are installed on the long arm system and in an emergency can all be closed instantaneously and simultaneously from the bridge. So perfect is the system of water-tight

bulkheads throughout the liner, that the Tenyo Maru is practically unsinkable.

The main propelling machinery of the Tenyo Maru is composed of Parson's steam turbines. One H. P. turbine with rotor of 76 in. diameter is situated at the center of the engine room and one L. P. turbine with rotor of 106 in. diameter is placed on either side. Each turbine drives a separate shaft of 12 1/16 in. in diameter, fitted with one propeller. The reversing turbines, of ample power to insure efficient maneuvering, are incorporated with the L. P. turbine casing, the two side propellers being used for going astern.

The turbines are designed for a working boiler pressure of 180 lbs. to the square inch, developing about 17,000 H. P. at 270 R. P. M. As the turbines rotate in one direction only and are perfectly balanced, they do their work without noise and without vibration.

The triple propeller arrangement has as much advantage over the twin screw system as the twin screws are better than a single propeller. Smaller propellers can be used, thus reducing the chance of losing blades, and in case this happens to one propeller the liner is still as well off as the twin screw steamer.

In the engine room are numerous powerful auxiliary engines, each one duplicated as a provision against break-down. There are 28 sets of pumps, two powerful evaporators and one duplex distiller for the manufacture of fresh water.

The steam generating plant consists of 13 single ended, Scotch boilers, 15 ft. 9 in. in diameter and 11 ft. 6 in. long, having 52 Morrison's suspension furnaces and an aggregate heating surface of 37,660 sq. ft., working under Howden's forced draught. The boilers are arranged in two compartments enclosed by separate water-tight bulkheads with automatic water-tight doors of the long arm latest patent type. Each group of boilers has a common funnel of oval form with diameters 12 ft. 6 in. and 9 ft. 6 in.

The electric generating plant consists of two sets of 75 K. W. compound engine dynamos, one set being kept in reserve all the time. The wiring is done on the double distribution box system and arranged so as to be accessible at all parts of the ship.

Edgar Hough, who was mate of the steamer John B. Cowle last season, has been appointed master of the steamer Parks Foster.

APPOINTMENTS OF MASTERS AND ENGINEERS

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BELKNAP & PHILLIPS, ST. CLAIR, MICH.

Str. Maud	Charles Weitzman	Isaac Garrett
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CAPT. RAYMER BELL, MARINE CITY, MICH.

Bge. S. B. Pomeroy	Joseph H. Gillingham	_____
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" Adam Cornelius	John A. Montgomery	Daniel Darcy
" Kensington	Martin Christie	John Mallon
" Yale	_____	Charles Holtz
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" Caledonia	P. M. Grant	A. B. Frasier
" Italia	H. G. Herbert	_____
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" Easton	E. S. Smith	J. E. Avens
" Caribou	A. A. Batten	Robert Griedson
" Manitou	Norman McCoy	William McLaren

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" Duluth	A. R. Graves	W. Chapin
" Wau-Kon	— Frame	W. J. Stephens
" Sainte Marie	L. R. Boynton	Richard Walsh
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MR. CHARLES MOORE.

Charles Moore, who for the past two years has been connected with the Submarine Signal Co., of Boston, has resigned to accept the vice presidency of the Security Trust Co., of Detroit. Mr. Moore's efforts on behalf of the Submarine Signal Co. were marked with pronounced success. During the past two years the signals have been placed upon all government lightships and the shore station and bell buoy work has begun. The company has equipped 21 vessels of the United States navy, including colliers, battleships and torpedo boat destroyers. The revenue cutter service and the army transport service have also begun to equip their vessels. This problem of the use of the signals on lake vessels has been satisfactorily worked out and the number of installations aboard lake steamers is steadily increasing. Additional stations are also being established. The company has made excellent progress abroad, especially in Great Britain.

QUESTION AND ANSWER
CONTEST CLOSED.

The MARINE REVIEW question prize contest for masters and mates has been closed and contestants are notified to have all answers to questions and problems filed before June 1. The publishing of the answers will then follow.

QUESTIONS FOR WHEELSMEN
AND WATCHMEN.

454. A boat drifts 51 miles in 23 hrs. 5 mins. 30 secs. How long did it take her to drift one mile, provided she drifted at the same rate of speed in the whole drift?

455. How many hours from 3 o'clock Saturday afternoon till 9 a. m., Sunday?

456. If a train travels 45 miles per hour, how far will it go from half-past 9 in the morning to a quarter of 7 in the evening?

457. If your boat burns $\frac{5}{8}$ of a ton of coal per hour, how many hours can she run on 90 tons?

458. 25 miles is 0.5 of the distance between two lighthouses. What is the distance?

459. A cu. ft. of water weighs 62.5 lbs.; ice is 0.92 as heavy as water. What is the weight of a cu. ft. of ice?

460. A gallon of water weighs 8.33 lbs. What is the weight of a gallon of milk, which is 1.03 times as heavy as water?

461. A ship sails 18.54 miles an hour. How far will she sail in 15.5 hours?

462. A quantity of provisions will

last 25 men 12.75 days. How long will it last one man?

463. A steamer uses 15.4 tons of coal in 24 hours. How many tons will she consume in a 600-mile run if she makes 11.5 miles per hour throughout the run?

464. If a watch gains 1 min. 17 sec. per day, how much will it gain during March and April?

465. If the sun rises at 5:10 a. m. and sets at 6:42 p. m., how long is the day and what is the length of the night?

ANSWERS TO QUESTIONS FOR WHEELSMEN AND WATCHMEN.

444. 1,287 miles.
445. 256 miles.
446. \$25,425.8.
447. 9 minutes.
448. 148.5 miles.
449. 8 hrs. 20 min. 48 sec.
450. 9.13 miles.
451. 12.38 miles per hour; 4.84 min., or 4 min. 50 sec. per mile.
452. 0.33075.
453. 565.488 ft.

DREDGING AT SUPERIOR ENTRY.

Abstract of letter bids received by Major Graham D. Fitch, Corps of Engineers, for hire of dredging plant at Superior Entry, Wis., during 1908, and opened at U. S. engineer office, Duluth, Minn., April 8, 1908. Amount proposed to be expended on this work, about \$30,000.

No. of bid.	Name and address of bidder.	For hire of dipper dredge (200 cu. yds. capacity) with two dump scows, a steam tug all with crews and equipment; per hour of actual time worked.	Same for hydraulic suction dredge, 300 cu. yds. capacity per hour.
*1.	Great Lakes Dredge & Dock Co., Chicago, Ill.	\$25.00	\$35.00
2.	Northern Dredge & Dock Co., Duluth, Minn.	24.00	—
3.	Duluth Superior Dredging Co., Duluth, Minn.	35.00	36.50
4.	Zenith Dredge Co., Duluth, Minn.	28.50	—

*Recommended for acceptance.

John Bryson, assistant to the chief constructor of the navy, died in Washington last week at the age of 65 years. He was chief constructor for the Austrian government in the 70's and later became connected with the Cramp ship yard at Philadelphia. He was a native of Scotland.

The naval appropriation bill as reported by the house committee on naval affairs calls for two new battleships, ten torpedo boat destroyers, eight submarines and one submarine torpedo boat. The battleships will be of the Delaware class.

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"	Fannie Neil	Charles Anderson	—
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"	Pere Marquette No. 4	Melvin Mackey	W. J. Reardon
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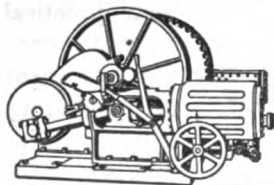
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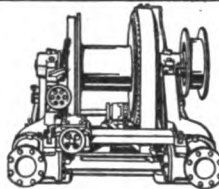
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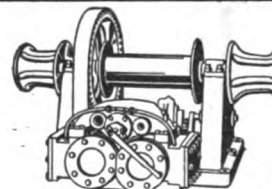
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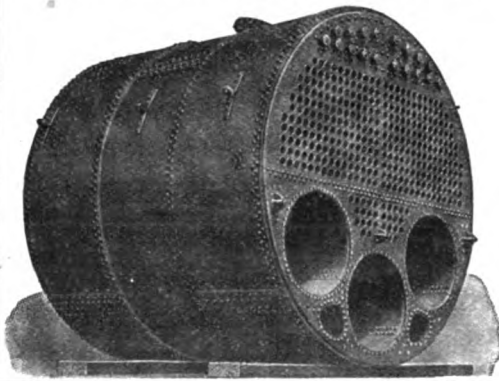
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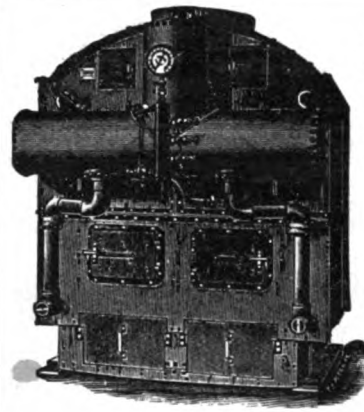
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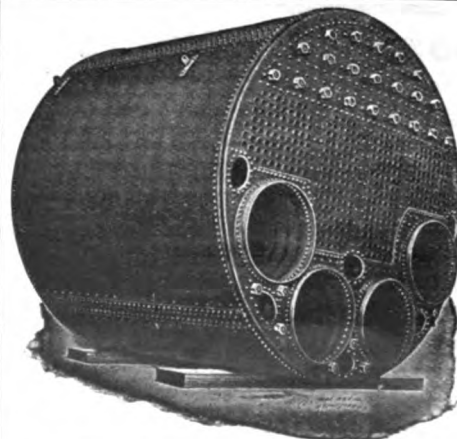


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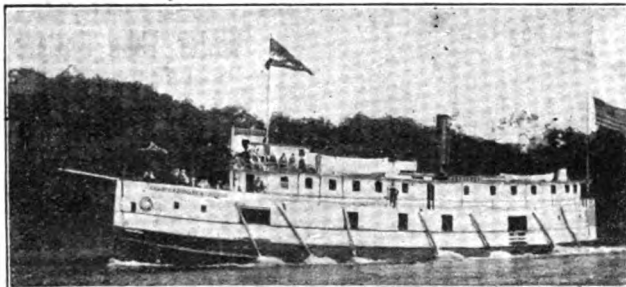
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